Terraces and Uplands

About 80% of the reconnaissance area is terrace and upland. Historically, this type supported mixed pine-hardwood forests, upland hardwood forests, and native grassland. Today, unmanaged pine-hardwood and hardwood forests, shrubland (largely cutover pine-hardwood forest), managed natural pine stands, pine plantations, agricultural crops, and various kinds of development occur on terraces and uplands.

Unmanaged pine-hardwood forests. This cover type constitutes the greatest amount of the Watershed (Table 5). Loblolly is the predominate pine species with shortleaf pine on drier sites with poorer soils. Figure 25 depicts the vegetation structure observed on unmanaged pine-hardwood forests. There is a mean of 276 trees 2" dbh and greater per acre. Larger trees range up to 32 in. with a mean of 14 in. The small tree diameter is a manifestation of heavily cutover third-growth forests.

Figure 23. Heavily cutover, unmanaged pine-hardwood upland. Cass County, TX.

Figure 24. Unmanaged pine-hardwood forest loblolly pine dominant. Hopkins County, TX

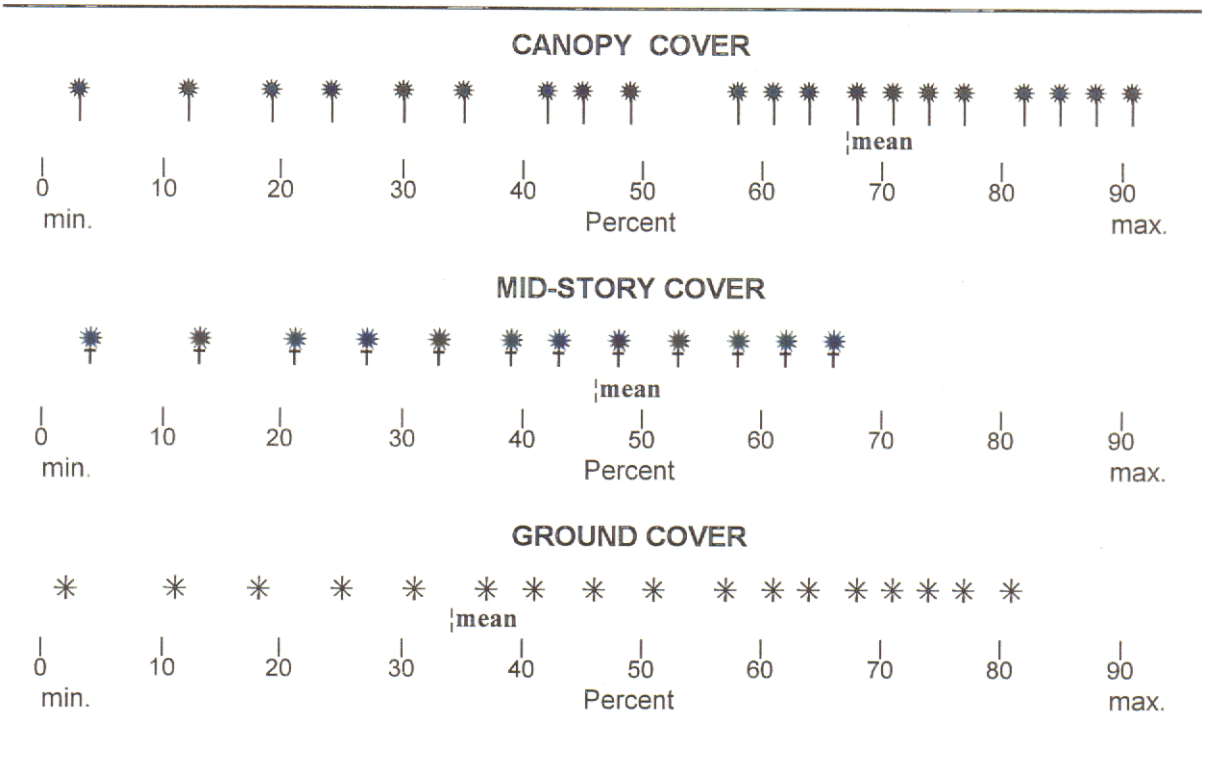

Figure 25. Percent vegetation cover on unmanaged pine-hardwood forest observed June - October 1994, Big Cypress Bayou Watershed.

One hundred fourteen plant species and 45 animal species were recorded as characteristic of unmanaged pine-hardwood forests in summer-fall. Shortleaf pine-oak communities within pine-hardwood uplands is discussed below under Special Attention Plant Communities. Unmanaged pine-hardwood forests, together with managed natural stands, rank high in structural diversity and species richness; the WHV = 4 and EQR = 3. This type is judged third in forage yield among Watershed rangelands (Table 6). The rangelands are suitable for both deer and cattle.

Unmanaaed hardwood forests. Blnejack oak-post oak and Bluejack, post, and blackjack oak communities were the only upland hardwood cover types encountered. Bluejack oak-post oak communities are listed for special attention. Ecologically, the two types are similar and were combined for evaluation. They are characterized below under Special Attention Plant Communities.

Manaaed **pine forests.** Approximately eight percent of pine-hardwood cover types are managed to favor pine for commercial timber production. This percentage includes naturally regenerated stands and merchantable age pine plantations (Figures 26 and 27). Sub-merchantable age pine plantations were grouped with **Shrub-dominated Terraces and Uplands** discussed below. Managed pine forests occur as stands with various age classes of loblolly and shortleaf pine. Loblolly is favored for management on higher quality, more mesic sites. Shortleaf increases on dry uplands (Figure 28). Slash pine, an introduced species, is reported in this region (USNRCS, 1983). The susceptibility of slash pine to damage by winter icing and rust disease limits its use in the region.

Managed pine observed was in relatively young stands 25-45 years old. Vegetation structure on these stands is shown in Figure 29. Height of the dominant trees is 50-80 ft. with a mean of 66 ft. The mean tree dbh is 12 in. The number of trees per acre greater than 2 in. is 224, and the basal area 175 ft^2.

Figure 26. Naturally regenerated loblolly pine forest under management. Harrison County, TX.

Figure 27. Young merchantable age loblolly pine plantation. Morris County, TX.

Figure 28. Managed shortleaf pine on dry upland. Morris County, TX.

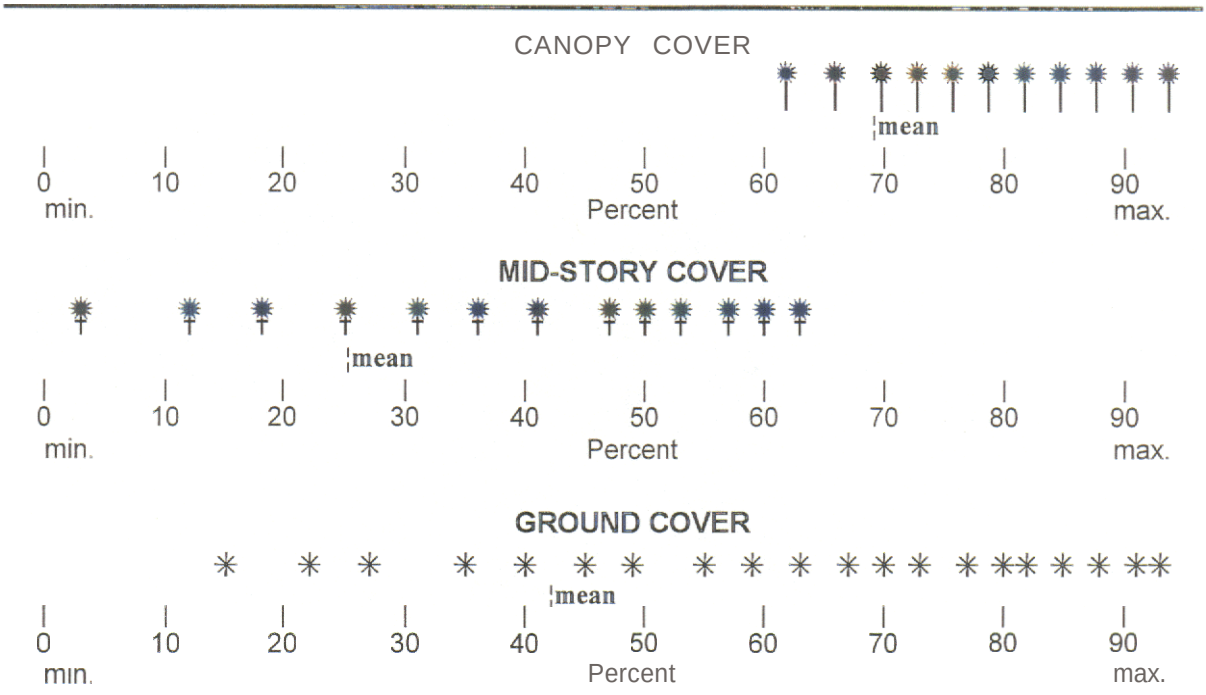

Figure 29. Percent vegetation cover on managed pine forests observed June - October 1994, Big Cypress Bayou Watershed.

Forty-three plant and 22 animal species were recorded as characteristic of managed pine-hardwood stands. Where tree canopies are more open, the diversity and quantity of ground cover is greater. Those habitats are better for ground foraging animals. Rhodes (1952) found that the best forage production on a managed East Texas pine-hardwood forest was where tree density was 90-l 15 $ft.^2$ basal area per ac. The variety of forage species on some managed stands make rangeland grazing suitable for both deer and cattle. Combination deer hunting, livestock grazing, timber management enterprises are mentioned under **Socio-Economics and Traditional Land Uses.** Managed pine forests observed were given a WHV = 3 and EQR = 6.

Shrub-dominated terraces and uplands. Vegetation on this cover type are sub-merchantable age pine plantations and early successional growth of species that regenerate naturally on clearcuts. Shrub uplands observed have been disturbed by clearcutting, clearing and planting of pine seedlings, or burning Sites observed have shrub cover up to 15 ft in height (Figures 30, 3 1, and 32)

Figure 30. Shrub regeneration on a large clearcut pine-hardwood upland Caddo Parish, LA.

Figure 31. Sub-merchantable age loblolly pine plantation classed as shrub-dominated upland. Big Cypress Bayou Watershed ecological reconnaissance. Upshur County, TX.

Figure 32. Shrub-dominated upland (clearcut and burned). Upshur County, TX.

One hundred seven species of plants and 39 animal species characterized the summer-fall aspect of shrub uplands. Structural diversity is low but species richness is high. Cutover pine-hardwood sites studied in central Louisiana have higher quality deer forage than forested sites (Thill, 1983; Thill et al., 1990). However, shrub cover is lacking as habitat for wildlife that require older vegetation and a stratified overstory Shrub-dominated terraces and uplands were given a WHV=5 and EQR=4. This type is second only to grasslands in forage production. Relatively high proportions of forbs and browse on shrub terraces and uplands make them more valuable range for deer than cattle. Deer feed primarily on forbs and woody plants and cattle feed primarily on grasses. For deer, the type provides protective cover.

Sub-merchantable age pine plantations observed range from 3-15 years old; most were IO-15 years old. Stands of this age have trees 15-20 ft. tall. The tree foliage closure is 3-91% with a mean of 64%. Mixes of grasses, forbs, and woody plants cover up to 9 1% of the ground layer with a mean coverage of 54%. Some younger plantations have a dense rough of native plants that provided cover and food for ground dwelling wildlife. Deer use the plantations for rest, escape, and foraging. The habitat value of sub-merchantable age plantations declines as the trees grow older and shade the ground vegetation (Figure 27). When harvesting of timber begins, forage quantity for wildlife increases concomitantly with opening of the stands Plantations observed are poor to fair wildlife habitat (WHV = 2; EQR = 7).

Grasslands

Hay fields, pastures, and old fields are the grasslands observed. Cumulatively, grasslands cover about 25% of the reconnaissance area. Hay fields are the largest grassland sub-type and occur in the largest units, i.e., up to several hundred acres or more (Figure 33). Reconstituted lignite mine sites planted to non-native grasses (Figure 34), and turf farms were included in this type.

The variety of plants is slightly greater on pastures than hay fields. Wildlife make greater use of pasture and hay field edges where the protective cover of woodlands is nearby. Ecologically, these two